

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-3. (Canceled)

4. (Currently amended): ~~The method of claim 3, wherein A~~  
method of joining a pair of metal components comprising the steps of:

(a) placing a first metal component having a first exposed continuous surface and a second metal component having a second exposed surface in overlapping relationship to each other;

(b) providing a metal rivet having a head and a pointed tip opposite the head for entering into the first and second components; and

(c) rotating the rivet about its longitudinal axis and simultaneously plunging the rivet through the first component continuous surface and into the second component, wherein the hardness of the metal rivet is substantially similar to the hardness of at least one of the first and second components, such that the metal of the rivet and the first and second components plastically deform; and

(d) solidifying the plasticized metal to produce a metallurgical bond between the rivet and each of the first and second components, wherein a final position of the rivet tip is within the second component and the rivet tip raises a portion of the second exposed surface.

5. (Previously presented): The method of claim 4, wherein the raised portion has a semispherical configuration.

6. (Previously presented): The method of claim 4, wherein the first and second components are held together between a clamp positioned on the first exposed

surface and a backing anvil positioned against the second exposed surface, wherein the backing anvil defines a recess which receives the raised portion and deforms the raised portion into the configuration of the recess.

7. (Canceled)

8. (Currently amended): ~~The method of claim 7, wherein A~~  
method of joining a pair of metal components comprising the steps of:

(a) placing a first metal component having a first exposed continuous surface and a second metal component having a second exposed surface in overlapping relationship to each other;

(b) providing a metal rivet having a head and a pointed tip opposite the head for entering into the first and second components; and

(c) rotating the rivet about its longitudinal axis and simultaneously plunging the rivet through the first component continuous surface and into the second component, wherein the hardness of the metal rivet is substantially similar to the hardness of at least one of the first and second components, such that the metal of the rivet and the first and second components plastically deform; and

(d) solidifying the plasticized metal to produce a metallurgical bond between the rivet and each of the first and second components, and the first and second components are held together between a clamp positioned on the first exposed surface and a backing anvil positioned against the second component, wherein the backing anvil has a substantially planar surface against which the rivet abuts to maintain the rivet tip flush with the second exposed surface.

9. (Canceled)

10. (Currently amended): ~~The method of claim 1;~~ A method of joining a pair of metal components comprising the steps of:

(a) placing a first metal component having a first exposed continuous surface and a second metal component having a second exposed surface in overlapping relationship to each other;

(b) providing a metal rivet having a head and a pointed tip opposite the head for entering into the first and second components; and

(c) rotating the rivet about its longitudinal axis and simultaneously plunging the rivet through the first component continuous surface and into the second component, wherein the hardness of the metal rivet is substantially similar to the hardness of at least one of the first and second components, such that the metal of the rivet and the first and second components plastically deform; and

(d) solidifying the plasticized metal to produce a metallurgical bond between the rivet and each of the first and second components, wherein at least one of the first and second components is preheated prior to plunging the rivet therein.

11-18. (Canceled)

19. (Currently amended): ~~The method of claim 18;~~ A method of joining a pair of metal components comprising the steps of:

(a) placing a first metal component having a first exposed continuous surface and a second metal component having a second exposed surface in overlapping relationship to each other;

(b) providing a metal rivet having a head and a pointed tip opposite the head for entering into the first and second components; and

(c) rotating the rivet about its longitudinal axis and simultaneously plunging the rivet through the first component continuous surface and into the second

component, wherein the hardness of the metal rivet is substantially similar to the hardness of at least one of the first and second components, such that the metal of the rivet and the first and second components plastically deform; and

(d) solidifying the plasticized metal to produce a metallurgical bond between the rivet and each of the first and second components, further comprising joining a third metal component to the second component by the steps of:

(i) positioning the third component having a third exposed surface in overlapping relationship to the second exposed surface;

(ii) providing another metal rivet having a head and a tip opposite the head for entering into the third and second components; and

(iii) rotating the other rivet about its longitudinal axis and simultaneously plunging the other rivet through the third component exposed surface and into the second component, wherein the hardness of the other metal rivet is substantially similar to the hardness of one of the third and second components, wherein the third exposed surface defines a pilot hole into which the other rivet is positioned prior to step (iii).

20. (Canceled)

21. (Currently amended): ~~The method of claim 1;~~ A method of joining a pair of metal components comprising the steps of:

(a) placing a first metal component having a first exposed continuous surface and a second metal component having a second exposed surface in overlapping relationship to each other;

(b) providing a metal rivet having a head and a pointed tip opposite the head for entering into the first and second components; and

(c) rotating the rivet about its longitudinal axis and simultaneously plunging the rivet through the first component continuous surface and into the second component, wherein the hardness of the metal rivet is substantially similar to the hardness of at least one of the first and second components, such that the metal of the rivet and the first and second components plastically deform; and

(d) solidifying the plasticized metal to produce a metallurgical bond between the rivet and each of the first and second components further comprising and (c) removing the rivet head following step (d).

22. (Previously presented): The method of claim 21, wherein the rivet head is joined to a main portion of the rivet via a narrowed portion such that when the plasticized metal solidifies, the rivet head breaks off at the narrowed portion from the rivet main portion.

23-29. (Canceled) according to the method of claim 1.

30. (Currently amended): ~~The system of claim 29, further comprising~~ A system for joining a first metal component to a second metal component with a rivet, wherein the hardness of the rivet is substantially similar to the hardness of at least one of the first and second components, said system comprising:

a clamp positioned on a continuous first exposed surface of the first component for maintaining the first component adjacent the second component;

a backing anvil for supporting a second exposed surface of the second component adjacent the first component;

means for rotating and plunging the rivet through the continuous first exposed surface and into the second component to produce a region of plasticized metal between the rivet and each of the first and second components, the plasticized metal being

solidifiable to form a metallurgical bond between the rivet and each of the first and second components; and means for removing flash produced when the rivet is friction welded to the first and second components.

31. (Currently amended): The system of claim 29 30, wherein said means for removing flash comprises a moveable member linked to said means for rotating, said moveable member configured to move about the rivet to remove the flash.

32. (Previously presented): The system of claim 31, wherein said rotating means is disengagable from the rivet to allow the friction weld to solidify while said moveable member continues to move about the rivet.

Stol et al  
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**Remarks**

Claims 4-6, 8, 10, 19, 21, 22, and 30-32 have been indicated as containing allowable subject matter. Claims 4, 8, 10, 19, 21 and 30 have been rewritten in independent form including all limitations of their respective base claims and any intervening claims. Rejected claims 1-3, 7, 9, 11-18, 20 and 23-29 are canceled.

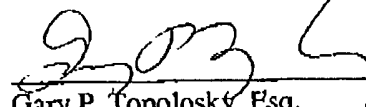
Allowance of claims 4-6, 8, 10, 19, 21, 22 and 30-32 is respectfully requested.

Respectfully submitted,

Customer Number

08840

PATENT TRADEMARK OFFICE



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